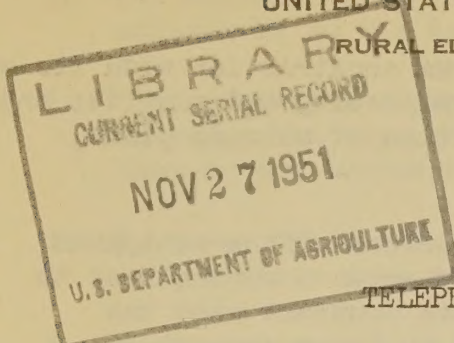


## UNITED STATES DEPARTMENT OF AGRICULTURE

RURAL ELECTRIFICATION ADMINISTRATION

WASHINGTON 25, D. C.



October 30, 1951

## TELEPHONE ENGINEERING MEMORANDUM 503R1

Subject: Methods of Construction of Telephone Borrowers' Facilities  
and Purchase of Materials and Equipment

The purpose of this memorandum is to set forth the methods available to REA borrowers for the construction of telephone facilities and for the purchase of materials and equipment to be used in such construction.

## METHODS AVAILABLE FOR CONSTRUCTING TELEPHONE SYSTEM FACILITIES

A. Labor and Material Contract Construction.

REA policy requires that competitive bids be taken on all construction to be performed under a construction contract unless the borrower can demonstrate that some other procedure would better serve the interest of the borrower. Where competitive bids are taken the contract must be awarded to the lowest responsible bidder unless all bids are rejected or unless the borrower can show that the award of the contract to other than the low bidder is in the best interest of the borrower.

Construction by Labor and Material Contract means that the Contractor performs the construction according to terms of a contract with the Owner. There are two variations of this method. They are:

1. With the contractor furnishing all labor and all materials for the project.
2. With the contractor furnishing all labor and part of the materials with the balance of the materials being furnished by the borrower. Under this method of construction the borrower has the opportunity to order the critical or long delivery items in anticipation of the construction program and still retain the advantages to be gained from labor and material contract construction. Where necessary or desirable, the borrower should order only the particularly critical items of materials and thus eliminate the ordering, storage, and accounting for the balance of the materials items that would be required if all materials were purchased by the borrower and construction were undertaken by a labor only contract.



## B. Force Account Construction.

Under force account construction the borrower performs construction with its own employees and furnishes all materials, transportation, tools, and supplies and equipment. This method may be used for the construction of outside plant, station equipment, and small buildings.

Generally, it is expected that the installation of central office equipment will be made by the manufacturer of the equipment either as a subcontract to a general labor and material contract or as a separate contract when the balance of the system facilities are being installed by force account or by separate contract.

It is the responsibility of the borrower, with the advice and recommendation of its engineer, to determine the construction method which is best suited to its needs within the limits of funds available. In selecting the method of construction, borrowers should weigh carefully the relative advantages and disadvantages of each method, including such factors as relative costs, quality and speed of construction, availability of manpower and equipment, amount of supervision required, and competency of accounting personnel. Consideration should be given to the experience that the borrower has had with these two methods of construction. REA does not recommend the method of construction. While the method of construction determined by a borrower is subject to the approval of REA, no disapprovals of a borrower's choice of method will be made unless it is clearly evident that the borrower does not have adequate equipment and personnel to carry out properly the chosen method or that the cost of construction by the chosen method will be in excess of the appropriate items in the loan budget.

The determination of the method of construction should preferably be made after the area coverage design has been prepared by the borrower's engineer and the extent of the construction to be done is known.

### PLANS AND SPECIFICATIONS

Plans and specifications for the construction of all projects or systems should be prepared from data contained in an approved area coverage design developed by the borrower's engineer to provide telephone service on an area coverage basis.

### DESCRIPTION OF METHODS OF CONSTRUCTION

#### A-1 Labor and Material Contract Construction.

This method of construction provides for the contractor furnishing all labor and all materials on a unit price basis and the borrower paying the contractor for the completed facilities on the basis of an approved final inventory. Briefly, the principal steps under this method of construction are:



1. The borrower's engineer prepares the area coverage design and submits it to the borrower and REA for approval.
2. The borrower's engineer prepares final plans and specifications, based on the area coverage design referred to above, and submits them to the borrower and REA for approval.
3. Borrower sends out invitations to contractors to submit sealed bids (unless some other arrangement has been approved by REA).
4. Borrower opens bids and selects successful bidder.
5. Borrower executes a labor and material construction contract with the successful bidder. (See following section on "Construction Contract Documents.")
6. Contractor begins work within time specified after approval by REA of the executed contract.
7. Contractor submits to borrower a monthly invoice to be used as basis for payment for work completed.
8. Borrower's engineer supervises and inspects construction in process.
9. On completion of construction, borrower's engineer submits final inventory documents and maps of completed facilities and after REA approval, final payments are made.

A-2 Labor and Material Contract Construction Where Some Materials are Furnished by the Borrower.

In those cases where a borrower has on hand an appreciable quantity of approved materials or has on order approved materials that it wishes to furnish for the construction of its telephone facilities, Supplement A (copy attached) is to be inserted in the Labor and Materials Construction Contract (REA Form DS-T-10) as part of the proposal. The quantities and prices of the materials to be furnished are to be listed on the Supplement which is to be inserted between pages b4 and b5 of all copies of the proposal form in DS-T-10 and is to be executed along with the proposal. Additional copies of Supplement A may be obtained from the Engineering Division. The principal steps under this method of construction are identical to those listed above for labor and material contract construction except for the following:

1. Bids for construction should be invited on the basis of the contractor furnishing all labor and all materials necessary for the completion of the construction; provided, however, that the materials listed on Supplement A, to be used in constructing the project, will be furnished to the contractor by the borrower.
2. Bidders should base their unit materials bids on, but not necessarily restrict their bids to, the prices quoted by the borrower for materials listed in Supplement A.



3. Materials to be furnished by the borrower should be released to the contractor at the start of construction and the contractor shall give the borrower a written receipt (Materials Receipt, REA Form DS-192, copy attached) for all such materials.
4. Materials that are to be furnished by the borrower (excluding materials, other than poles, stored in the open and not within 100 feet of any building) shall, until released to the contractor, be covered by fire and either windstorm or extended coverage insurance. The insured values are not to be less than actual cash value of the property insured.
5. Subject to adjustment at the time of final settlement, the contractor on his monthly invoices shall credit the borrower, at the prices quoted in Supplement A, for all materials furnished by the borrower and installed by the contractor during the preceding month.
6. Any materials furnished by the borrower remaining as surplus at the completion of construction shall be returned to the borrower. For such materials the borrower will furnish a written receipt to the contractor and credit the contractor at the prices quoted in Supplement A.

#### Construction Contract Amendments.

Construction contracts may be amended to provide for necessary changes in or additions to the original construction contemplated. All amendments require REA approval before any changes may be authorized by the borrower or the borrower's engineer.

#### Overbuilding.

Construction in excess of that stated in the contract may result in a serious situation since it may obligate more money than is available. Engineers and borrowers should not authorize the building of additional facilities without the prior approval of REA.

The borrower, the engineer, and the contractor must share equally the responsibility for limiting construction to that included in a construction contract and construction contract amendments approved by REA.

#### B. Force Account Construction.

Under this method of construction, a borrower purchases all materials, and performs the construction with its own employees. These activities include ordering, checking, accounting for, and warehousing all materials, as well as procurement of necessary trucks and other work equipment, employment of



qualified construction personnel, and accounting for all expenditures. Briefly, the principal steps under this method of construction are as follows:

1. The borrower's engineer prepares the area coverage design and submits it to the borrower and REA for approval.
2. The borrower's engineer prepares final plans and specifications based upon the area coverage design referred to above including estimated unit costs and total construction cost of labor and materials and also prepares an itemized list of the materials required and submits them to the borrower and REA for approval.
3. Materials required in accordance with the approved final plans and specifications are ordered by the borrower (See following section on "Purchasing of Materials and Equipment for Project Construction.")
4. Lines are staked by the borrower's engineer in accordance with the final plans and specifications.
5. Necessary qualified personnel are obtained both for office, warehouse, and construction crews.
6. Arrangements are made to obtain all necessary trucks, tools, and other work equipment.
7. Upon submission to and approval by REA of "Certificate of Availability of Materials," construction schedule, and statement that sufficient line has been staked to allow construction according to schedule, construction may proceed.
8. Progress reports are submitted to REA by the borrower's engineer and complete records kept on all materials, labor, transportation, and other costs of construction in order that all costs may be fully accounted for and entered on the borrower's accounting records.
9. On completion of construction, facilities are given final inspection and final inventory documents and maps are prepared by the borrower's engineer.

#### PURCHASE OF MATERIALS AND EQUIPMENT FOR PROJECT CONSTRUCTION

Materials and equipment purchased by methods outlined in this memorandum must conform to approved plans and specifications where applicable.

Experience has demonstrated the desirability of taking formal bids or informal quotations from several suppliers in purchasing materials and equipment, and REA so recommends. The lowest responsible bidder shall receive the award unless the borrower can demonstrate that awarding the contract to another responsible bidder is in the best interest of the borrower.



1. The following materials and equipment may be purchased by borrowers from suppliers of their own choosing by either a standard form of contract or purchase order both of which shall provide for a price ceiling. (See section on standard forms):
  - a. All materials and equipment included on the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers."
  - b. Poles - in accordance with REA specifications.
  - c. Crossarms - in accordance with REA specifications.
  - d. Miscellaneous materials and supplies, categories of which are not set forth in the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers," such as sand, cement, gravel, and office and other supplies usually locally obtained, but not including central office equipment and other specialized equipment such as radio telephone, carrier communication, and repeaters.

Since the REA standard form of contract contains protective provisions which are beneficial to borrowers, REA recommends that materials and equipment be purchased by contract rather than by purchase order, except where minor quantities are involved. Further, borrowers should, wherever practicable, order their total requirement of a particular item or items from one supplier in order to obtain the maximum benefits as to price and delivery. At the same time a contract or purchase order is placed with a supplier, a copy must be sent to REA for its information and determination that the order is consistent with the approved plans and specifications and so that available funds may be advanced to finance the purchase.

2. Central office equipment and other specialized equipment such as radio telephone, carrier communication, and repeaters shall be purchased only by a standard form of contract which provides for a price ceiling and which shall be subject to the approval of REA.

If a borrower does not elect to ask for formal bids for the purchase of central office equipment and other specialized equipment, it shall obtain informal quotations from at least three responsible suppliers. The borrower shall submit to REA for its information, along with the executed contract, a full report of the quotations it has received, the report or recommendations of its engineer, and the action taken by the responsible officials in making the selection of the central office equipment and the reasons therefor.



## PURCHASE OF MATERIALS AND EQUIPMENT OTHER THAN PROJECT CONSTRUCTION

1. Furniture and office equipment, vehicles and other work equipment required for efficient operation of their businesses may be purchased by borrowers from suppliers of their own choosing within the limits of funds available. Such purchases are not subject to REA approval.
2. The purchase of normal inventory materials for maintenance, operation, and minor construction such as required for subscriber connections (other than in connection with project construction), may be procured through the use of purchase orders submitted directly to a supplier. Copies of such purchase orders are not to be sent to REA.

### CONSTRUCTION CONTRACT DOCUMENTS

The following contract documents are subject to approval of REA and are to be executed and submitted to REA, in triplicate, for approval.

1. Labor and Materials Construction Contract.

When construction is to be done by contract the "Telephone System Construction Contract (Labor and Materials)," REA Form DS-T-10, is to be used for constructing all outside plant facilities and may be used for the construction of all other items of plant when included in the proposal. This form of contract includes the "Notice and Instruction to Bidders," the proposal, the contract form, the form of bid bond, and the specifications for construction, which collectively, comprise the "Construction Contract." A supply of Form DS-T-10 is available from REA.

2. Contract to Furnish, Deliver and Install Central Office Equipment and Material.

When central office equipment and materials are to be installed by the supplier, REA contract Form DS-T-25 is to be used. This form of contract provides for the furnishing, delivery, and installation of central office equipment and materials on a lump sum price with provisions for any alternates that may be necessary. A supply of DS-T-25 is available from REA.

3. Contract to Furnish and Deliver Central Office Equipment and Materials.

When central office equipment and materials are to be installed by other than the supplier, REA contract Form DS-T-47 is to be used. This form of contract provides for furnishing and delivering of the central office equipment on a lump sum price with provisions for any alternates that may be necessary. A supply of Form DS-T-47 will be made available by REA.





4. Contract to Construct Buildings.

When buildings are to be constructed by contract, REA contract Form DS-T-46 is to be used. This form of contract is to be used when buildings are to be constructed separately from the construction contract for outside plant. A supply of Form DS-T-46 will be made available By REA.

STANDARD FORMS FOR THE PURCHASE OF MATERIALS AND EQUIPMENT

Purchase of materials and equipment through the use of the following standard forms are not subject to approval by REA, as outlined in the above section "Purchase of Materials and Equipment for Project Construction." However, one copy is to be submitted to REA in order that funds may be advanced promptly to borrowers to finance the purchases.

1. Materials Contract.

REA Form DS-T-61, Materials Contract, may be used for the purchase of materials and equipment as outlined in this memorandum. This form of contract is to be executed by the borrower and the supplier and, upon execution, becomes the agreement for the purchase of the materials contained therein. A supply of REA Form DS-T-1R1 will be made available by REA.

2. Purchase Order Form.

REA Form DS-T-60, standard form of purchase order, is being prepared as a sample form to be used by the borrower for the purchase of any of the materials and equipment as outlined in this memorandum. The borrower is expected to incorporate all provisions of this standard form of purchase order on its own purchase order form.

*J. K. O'Shaughnessy*

J. K. O'Shaughnessy  
Chief, Engineering Division







TO: \_\_\_\_\_

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|-------------------------|
| PURCHASE ORDER NO.      |
| DATE                    |
| REA PROJECT DESIGNATION |

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SELLER

BY

BY:

DATE \_\_\_\_\_

AUTHORIZED REPRESENTATIVE

SIGNATURE

T I T L E



## TERMS AND CONDITIONS

1. Prices are f.o.b. \_\_\_\_\_. Sales, purchase, or use taxes shall be billed separately.
2. Payment shall be made within 30 days after delivery of the Materials and receipt of invoice, in duplicate.
3. The Materials furnished hereunder shall conform to the REA Specifications for Materials in effect at the time of acceptance of this Purchase Order by the Seller and shall become the property of the Purchaser when delivered; provided, however, that the Purchaser may reject any such Materials as do not comply with the Specifications for Materials and warranties of the Seller and manufacturers, and any defective materials, either before or after incorporation of such materials into the project; provided such rejection is made within one year of date of delivery. Upon any such rejection the Seller shall replace the rejected materials with materials complying with the Specifications for Materials and warranties, f.o.b. cars at suitable railroad destination. The Purchaser shall return the rejected materials f.o.b. cars at the same destination. In the event of failure by the Seller to so replace rejected materials, the Purchaser may make such replacement and the cost and expense thereof shall be paid by the Seller.
4. The Seller shall indemnify the Purchaser, its agents and employees, from any and all claims, suits and proceedings for infringement of any patent or patents covering Materials. The Seller shall defend any suit or proceeding brought against the Purchaser, its agents or employees, based upon a claim that the Materials or any part thereof constitute an infringement of any patent, or if the Seller shall fail to defend such suit or proceeding, the Purchaser may do so and the Seller shall make reimbursement for the expense of such litigation. If the Materials, or any part thereof, are held to constitute infringement and the use thereof is enjoined, the Seller shall, at its own expense, either procure for the Purchaser the right to continue to use the Materials, or such part thereof, or shall replace the Materials, or such part thereof, with non-infringing materials.
5. Materials furnished shall be only such unmanufactured articles, materials and supplies as have been mined or produced in the United States, and only such manufactured articles, materials and supplies as have been manufactured in the United States substantially all from articles, materials or supplies mined, produced or manufactured, as the case may be, in the United States.
6. *Price Policy.* (Strike out paragraph a or b; if neither is stricken paragraph b shall apply)
  - a. The prices herein are subject to adjustment to conform to the Seller's prices in effect at the time of shipment; provided, however, that such adjusted prices shall in no event exceed the prices permitted by the Office of Price Stabilization or other Government agency having jurisdiction nor shall the increase exceed \_\_\_\_\_ % of the prices herein.
  - b. The prices herein are subject to adjustment to conform to the Seller's prices in effect at the time of shipment; provided, however, that such adjusted prices shall in no event exceed the prices permitted by the Office of Price Stabilization or other Government agency having jurisdiction, and provided further, however, that if the Seller shall make effective any price increase which shall exceed 10% of the price herein, the Seller shall give the Purchaser prompt written notice thereof and the Purchaser shall have the right at any time prior to shipment to cancel this order as to any unshipped portion without payment of any cancellation charge.